

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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|------------|---|-------------------|---------------|
| Applicant  | : Hisashi Ohtani et al.   | Art Unit          | : 2871        |
| Serial No. | : 09/588,996  | Examiner          | : David Chung |
| Filed      | : June 6, 2000  | Confirmation No.: | 9311          |
| Title      | : ACTIVE MATRIX LIQUID CRYSTAL WITH CAPACITOR BELOW DISCLINATION REGION |                   |               |

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Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

REPLY TO ADVISORY ACTION DATED DECEMBER 13, 2005

Applicant requests reconsideration and allowance of the claims in view of the following remarks. In addition, applicant respectfully requests that the Examiner consider and provide a meaningful response to the substance of the arguments presented below, many of which were provided in applicant's last response. Applicant notes that the advisory action in no way addresses these arguments. Instead, it merely states, without further explanation, that:

Several disclosures have been cited to show that rubbing from one corner of the pixel was obvious at the time of the invention. The disclosure of Hirata has been cited to show that disclination was a commonly occurring effect due to such things as boundary conditions between pixels, rubbing, fringe field effects, etc.

Thus, the advisory action does not address the failures of the cited references to describe or suggest the recited subject matter, as set forth below. Instead, the only reference mentioned in the advisory action is Hirata, which is not used as the basis of any of the rejections.

Claims 1, 2, 4-7, 11-16, 20-22, and 26-38 are pending, with claims 1, 2, 4, 5, 11, 14, 20, 26 and 29 being independent.

Applicant acknowledges with appreciation the Examiner's allowance of claim 1, and the Examiner's indication that claims 32-38 are directed to allowable subject matter.

Claims 14-16 and 20-22, including independent claims 14 and 20, have been rejected as being anticipated by, or obvious in view of, Sato (U.S. Patent No. 5,708,485).

Applicant requests reconsideration and withdrawal of this rejection for at least the reason that Sato does not describe or suggest liquid crystal molecules oriented by rubbing in one

direction from one corner of the pixel, as recited in each of claims 16 and 20. As noted in the prior response, the action does not even attempt to show where this feature of the claims is shown by Sato. Indeed, at page 7, the action explicitly acknowledges that "Sato et al. does not disclose rubbing an alignment layer in one direction from one corner of the pixel."

As best understood, the action's indication that, because disclination "naturally occurs as a result of a plurality of factors, one of which is the rubbing direction, the amendment to the claims does not patentably distinguish them over the prior art[,] is meant to imply that this feature would be inherent in Sato's device because rubbing is one way of obtaining disclination, and because, as also argued in the action, disclination is inherent in Sato's device. Applicant strongly disagrees and respectfully submits that it defies logic to assert that the alleged inherency of disclination in Sato's device would have led one of ordinary skill in the art to actively perform a particular technique (i.e., the recited rubbing in one direction from one corner) to control the disclination. One simply does not follow from the other.

Accordingly, for at least these reasons, the rejection should be withdrawn.

Claim 2 also has been rejected as being anticipated by, or obvious in view of, Sato. Similarly to claims 16 and 20, claim 2 recites "said capacitor covers at least an active region of said switching element that is overlapped with one corner of a pixel where disclination is likely to occur due to a rubbing operation beginning in said corner." As with claims 16 and 20, Sato does not describe or suggest a rubbing operation beginning in a particular corner of a pixel that overlaps an active region of a switching element, and the rejection does not even attempt to show where Sato describes or suggests this feature.

Moreover, while the rejection indicates that claim 2 somehow recites an intended use, this is not the case. Rather, claim 2 recites a particular structural arrangement (i.e., that the capacitor covers at least an active region of that switching element that is overlapped with one corner of a pixel where disclination is likely to occur due to a rubbing operation beginning in the corner) and does not recite any intended use. Sato in no way describes or suggests a capacitor arranged in this manner. Sato also fails to describe or suggest that the recited electronic apparatus is one of a video camera, a projector, a projection TV, a head-mounted display, a car

navigation apparatus, a personal computer and a portable information terminal, as also recited in claim 2.

Accordingly, applicant requests reconsideration and withdrawal of this rejection for at least these reasons.

Claims 4-7, 11-13 and 26-31, including independent claims 4, 5, 11, 26 and 29, have been rejected as being obvious over Sato in view of Ueda (U.S. Patent No. 5,459,596), Miyazawa (U.S. Patent No. 5,781,260), Hanazawa (U.S. Patent No. 5,835,171) and Koseki (U.S. Patent No. 5,345,324).

With respect to claim 4, applicant requests reconsideration and withdrawal of this rejection because neither Sato, Ueda, Miyazawa, Hanazawa, Koseki, nor any proper combination of the five describes or suggests an orientation film formed on the pixel electrode and having a surface that has been rubbed in one direction from one corner of the pixel and an auxiliary capacitor positioned so as to cover a part of the pixel including the one corner, as recited in claim 4. As noted above, the rejection concedes that Sato does not disclose an orientation film having a surface rubbed in one direction from one corner of the pixel. The rejection then relies on Ueda, Miyazawa, Hanazawa and Koseki as allegedly showing that it was known to rub an orientation film in this manner.

However, as has been previously noted, while Ueda, Miyazawa, Hanazawa and Koseki describe rubbing operations, none of Ueda, Miyazawa, Hanazawa, and Koseki describes or suggests any advantage to beginning such a rubbing operation in a particular region of a pixel (e.g., a corner or a region comprising a corner of a pixel) in which a capacitor and/or a switching element is formed, and accordingly, none of these references would have provided any motivation to combine the references in the manner needed to arrive at the claimed subject matter. In particular, even assuming for sake of argument that one of the references would have motivated one of ordinary skill in the art to perform a rubbing operation in forming the device of Sato, none of the references would have provided any motivation to rub an orientation film in one direction from one corner of the pixel that is covered by the auxiliary capacitor, as recited in claim 4.

Indeed, as has previously been noted, Koseki teaches away from such a rubbing operation. In particular, as has been noted in prior replies, Koseki, at, for example, FIG. 1, illustrates a thin-film transistor formed in an opposite corner from that at which rubbing begins. Thus, Koseki discloses rubbing toward a TFT, and, therefore, teaches away from the proposed combination of Sato with Koseki.

As has also been previously noted, arrangements such as the one recited in claim 4 result in an increase in the effective aperture area, which constitutes an unexpected result that illustrates the non-obviousness of the claimed subject matter (see the application at, for example, page 7, lines 1-7; page 14, line 4-11; and page 18, lines 15-22). In this regard, applicant again submits that the sheer number of references presently cited against the claims weigh in favor of patentability. Though the action seeks to establish that the claimed rubbing operation was common and conventional, in attempting to do so, the action actually establishes that practitioners of the rubbing operation did not recognize either (a) the recited feature of placing a capacitor and/or switching element in a corner from which the rubbing operation began, (b) the existence of disclination in this corner, or (c) the unexpected result and advantage that an effective aperture area may be increased by virtue of this approach.

Also, while the rejection indicates that motivation to combine the references would result from benefits that include lowering manufacturing costs and producing a device with predictable behavior, applicant has been unable to find any mention of such benefits in any of Sato, Ueda, Miyazawa, Hanazawa or Koseki. Accordingly, the rejection does not appear to set forth any proper motivation for combining the references.

In addition, the cited references also fail to describe or suggest that the recited electronic apparatus is one of a video camera, a projector, a projection TV, a head-mounted display, a car navigation apparatus, a personal computer and a portable information terminal, as also recited in claim 4.

Accordingly, for at least these reasons, the rejection of claim 4 should be withdrawn.

Independent claims 5, 11, 26 and 29 recite similar features and, as such, these claims, as well as their dependent claims, should be allowed for the reasons discussed above. In particular,

claim 5 recites liquid crystal molecules oriented by rubbing in one direction from one corner of the pixel, that a disclination of liquid crystal molecules occurs in a region including the one corner, and that the region overlaps with a capacitor and a thin film transistor. Claims 11, 26 and 29 further recite that the region also overlaps with a thin film transistor. As noted above, the cited references fail to describe or suggest these features.

Accordingly, for at least these reasons, the rejection should be withdrawn.

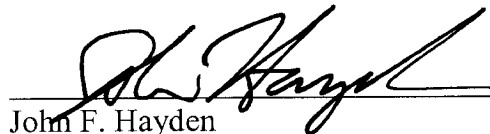
Applicant submits that all claims are in condition for allowance.

The fee in the amount of \$1,810 in payment of the request for continued examination (\$790) and the three-month extension of time fee (\$1,020) is being paid concurrently herewith on the Electronic Filing System (EFS) by way of Deposit Account authorization. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: \_\_\_\_\_

5/1/06



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